

What is claimed is:

1. A carrier head for chemical mechanical polishing, comprising:
a base having at least a portion formed of a polymer;
5 a mounting assembly connected to the base having a surface for contacting a substrate; and
a retainer secured to the portion of the base to prevent the substrate from moving along the surface.
- 10 2. The carrier head of claim 1, wherein the portion of the base is a ring-shaped body extended around a perimeter of the base.
3. The carrier head of claim 2, further comprising a dampening material secured between the retainer and the portion of the base.
- 15 4. The carrier head of claim 3, wherein the ring-shaped body includes at least one boss extending to contact the retaining ring.
5. The carrier head of claim 4, further comprising at least one screw
20 extending through apertures in the base, the ring-shaped body and the damping material and into a receiving recess in the retaining ring to secure the retaining ring to the base..
6. The carrier head of claim 5, wherein the boss surrounds the screw.
- 25 7. The carrier head of claim 3, wherein the polymer includes polyphenylenesulfide, carbon fibers and polytetrafluoroethylene.
8. The carrier head of claim 7, wherein the polymer includes about 50-
30 55% polyphenylenesulfide, 30-35% carbon fibers, and about 10-15% polytetrafluoroethylene.
9. The carrier head of claim 7, wherein the damping material includes a polyvinylchloride thermoplastic.

10. The carrier head of claim 1, wherein the polymer includes polyphenylenesulfide, carbon fibers and polytetrafluoroethylene.

5 11. The carrier head of claim 1, wherein the entire base is formed from the polymer.

12. The carrier head of claim 1, further comprising a dampening material secured between the retainer and the portion of the base.

10

13. The carrier head of claim 1, wherein a bottom portion of the retainer includes at least one of carbon, fluoropolymer, and polyester.

14. A carrier head for chemical mechanical polishing, comprising:
15 a base;
a mounting assembly attached to the base having a surface for contacting a substrate;
a retainer secured to the portion of the base to prevent the substrate from moving along the surface, and
20 a dampening material secured between the retainer and the base.

15. The carrier head of claim 14, wherein the dampening material includes at least one of polyurethane and polyvinylchloride thermoplastic.

25 16. The carrier head of claim 14, wherein the base has at least a portion formed of a polymer and the retainer is secured to the portion of the base.

17. The carrier head of claim 16, wherein the portion of the base is a ring-shaped body extended around a perimeter of the base.

30

18. The carrier head of claim 17, further comprising at least one screw extending through apertures in the base, the ring-shaped body and the damping material and into a receiving recess in the retaining ring to secure the retaining ring to the base.

19. The carrier head of claim 17, wherein the ring-shaped body includes at least one boss surrounding the screw and extending to contact the retaining ring.

5 20. The carrier head of claim 14, wherein a bottom portion of the retainer includes at least one of carbon, fluoropolymer, and polyester.

21. A carrier head for chemical mechanical polishing, comprising:
a base;
10 a mounting assembly attached to the base having a surface for contacting a substrate; and
a retainer secured to the portion of the base to prevent the substrate from moving along the surface, at least a bottom portion of the retainer including a material selected from the group consisting of polytetrafluoroethylene, perfluoroalkoxy,
15 polyethylene terephthalate, polyetheretherketone, polyetherketoneketone, polybenzimidazole, an imidized thermoset polyimide, a semi-crystalline thermoplastic polyester, and a long molecular chain molecule produced from poly-paraphenylene terephthalamide.

20 22. The carrier head of claim 21, wherein the bottom portion of the retaining ring further includes carbon.

23. The carrier head of claim 22, wherein the bottom portion of the retaining ring further includes graphite.

25 24. The carrier head of claim 22, wherein the bottom portion of the retaining ring further includes carbon fibers.

25. An article for attachment to a carrier head, comprising:
30 a ring-shaped body configured to be detachably secured at an outer perimeter of a carrier head, the ring-shaped body formed of a polymer and having a plurality of apertures therethrough and plurality of bosses surrounding the apertures.

26. The article of claim 25, wherein the polymer includes polyphenylenesulfide, carbon fibers and polytetrafluoroethylene.

27. An article for attachment to a carrier head, comprising:
5 a generally flat annular body configured to be detachably secured at an outer perimeter of a carrier head, the annular body formed of a dampening material and having a plurality of apertures therethrough.

28. The article of claim 27, wherein the dampening material includes at
10 least one of polyurethane and polyvinylchloride thermoplastic.

29. A retaining ring for a chemical mechanical polishing head, comprising:
an upper portion configured to be secured to a base;
15 a bottom portion that includes a material selected from the group consisting of polytetrafluoroethylene, perfluoroalkoxy, polyethylene terephthalate, polyetheretherketone, polyetherketoneketone, polybenzimidazole, an imidized thermoset polyimide, a semi-crystalline thermoplastic polyester, and a long molecular chain molecule produced from poly-paraphenylene terephthalamide.

30. The retaining ring of claim 29, wherein the bottom portion of the
20 retaining ring further includes at least one of graphite and carbon fibers.